```
FILE 'BIOSIS' ENTERED AT 11:05:05 ON 30 MAY 2004
COPYRIGHT (C) 2004 BIOLOGICAL ABSTRACTS INC.(R)

FILE 'MEDLINE' ENTERED AT 11:05:05 ON 30 MAY 2004

=> s petiard.in.
L1           1 PETIARD.IN.

=> d l1

L1   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   1988:587562  CAPLUS
DN   109:187562
TI   The hypothesis of J. C. Mestre concerning variability in plant cell
     cultures: methods of approach
AU   Vannereau, Agnes
CS   Lab. Biol. Cell., Fac. Pharm., Chatenay-Malabry, 92296, Fr.
SO   Lettres Botaniques (1988), (1), 41-8
     CODEN: LEBODV; ISSN: 0181-1797
DT   Journal; General Review
LA   French


=> s l1 and cocoa
L2           0 L1 AND COCOA

=> s crouzillat.in.
L3           0 CROUZILLAT.IN.

=> s petiard.au.
L4           0 PETIARD.AU.

=> s crouzillat.au.
L5           0 CROUZILLAT.AU.

=> s gene###(10a)(cocoa or chocolate)(10a)(detect### or determin###)
L6           8 GENE###(10A)(COCOA OR CHOCOLATE)(10A)(DETECT### OR DETERMIN###)

=> s l6 and PCR
L7           4 L6 AND PCR

=> s l7 and (chitinase or mitochondr### or choroplas###)
L8           2 L7 AND (CHITINASE OR MITOCHONDR### OR CHOROPLAS###)

=> d l8 1-2 bib ab kwic

L8   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2003:609270  CAPLUS
DN   139:241115
TI   Detection of hazelnut DNA traces in chocolate by PCR
AU   Herman, Lieve; De Block, Jan; Viane, Ronald
CS   Department for Animal Product Quality, Agricultural Research Centre,
     Melle, B-9090, Belg.
SO   International Journal of Food Science and Technology (2003), 38(6),
     633-640
     CODEN: IJFTEZ; ISSN: 0950-5423
PB   Blackwell Publishing Ltd.
DT   Journal
LA   English
AB   By use of the Dneasy Plant Tissue kit (Qiagen Inc.) plant DNA could be
     extracted from chocolate and related matrixes.  The polymerase chain reaction
     (PCR) detection of mitochondrial plant DNA is directly
     correlated with the length of the amplified fragment indicating shearing
     of DNA during chocolate production  Hazelnut DNA could be specifically
```

detected in chocolate matrixes with primers derived from the intron
between exon B and C of the **mitochondrial** gene nad1.
Specificity was confirmed towards individual chocolate ingredients and in 20 hazelnut neg. chocolates. From taxonomically closely related plant species, only Carpinus turczaninovii, Ostrya carpinifolia and Corylus americana showed cross reaction, this was because of the identical sequence of the nad1 fragment. Application of extra MgCl2 throughout the DNA extraction procedure and of a specially designed Mg2+ buffered **PCR**, increased the detection sensitivity of co-processed hazelnut in chocolate to 0.001% or 10 ppm.

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Detection of hazelnut DNA traces in chocolate by **PCR**

AB By use of the Dneasy Plant Tissue kit (Qiagen Inc.) plant DNA could be extracted from chocolate and related matrixes. The polymerase chain reaction (**PCR**) detection of **mitochondrial** plant DNA is directly correlated with the length of the amplified fragment indicating shearing of DNA during chocolate production Hazelnut DNA could be specifically detected in chocolate matrixes with primers derived from the intron between exon B and C of the **mitochondrial** gene nad1.
Specificity was confirmed towards individual chocolate ingredients and in 20 hazelnut neg. chocolates. From taxonomically closely related plant species, only Carpinus turczaninovii, Ostrya carpinifolia and Corylus americana showed cross reaction, this was because of the identical sequence of the nad1 fragment. Application of extra MgCl2 throughout the DNA extraction procedure and of a specially designed Mg2+ buffered **PCR**, increased the detection sensitivity of co-processed hazelnut in chocolate to 0.001% or 10 ppm.

ST sequence plant **mitochondria** gene nad1 NADH dehydrogenase **PCR**; hazelnut contamination chocolate **PCR** food allergy

IT Food allergy
(**PCR** detection of hazelnut DNA traces in chocolate and potential use in minimizing contamination)

IT Chocolate
PCR (polymerase chain reaction)
(detection of hazelnut DNA traces in chocolate by **PCR**)

IT **Genetic** element
RL: ANT (Analyte); BUU (Biological use, unclassified); FFD (Food or feed use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(intron; **PCR detection** of hazelnut DNA traces in **chocolate** using primers derived from intron 2 of the **mitochondrial gene** nad1)

IT Gene, plant
RL: ANT (Analyte); BUU (Biological use, unclassified); FFD (Food or feed use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(nad1; sequences of nad1 **mitochondrial** gene fragments from various plants, and uses thereof for **PCR** detection of hazelnut DNA in chocolate)

IT Beet (Beta maritima)
Corylus colurna
Ostrya carpinifolia
Soybean (Glycine max)
Theobroma cacao
(sequences of nad1 **mitochondrial** gene fragments from various plants, and uses thereof for **PCR** detection of hazelnut DNA in chocolate)

IT **Mitochondrial** DNA
RL: ANT (Analyte); BUU (Biological use, unclassified); FFD (Food or feed use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(sequences of nad1 **mitochondrial** gene fragments from various plants, and uses thereof for **PCR** detection of hazelnut DNA in chocolate)

IT DNA sequences
Protein sequences

(sequences of nad1 **mitochondrial** gene fragments, and uses thereof for **PCR** detection of hazelnut DNA in chocolate)

IT 487274-32-8, GenBank CAD21836 487274-33-9, GenBank CAD21838 487274-34-0, GenBank CAD21837
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(amino acid sequence; sequences of nad1 **mitochondrial** gene fragments, and uses thereof for **PCR** detection of hazelnut DNA in chocolate)

IT 415263-96-6 415263-97-7 415263-98-8 415263-99-9 415264-00-5
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(nucleotide sequence; sequences of nad1 **mitochondrial** gene fragments, and uses thereof for **PCR** detection of hazelnut DNA in chocolate)

IT 9079-67-8, NADH dehydrogenase
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(subunit I; sequences of nad1 **mitochondrial** gene (NADH dehydrogenase) fragments from various plants, and uses thereof for **PCR** detection of hazelnut DNA in chocolate)

L8 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:314432 CAPLUS
DN 132:330582
TI Use of DNA identification techniques for the determination of genetic material of cocoa in fermented or roasted beans and chocolate
IN Petiard, Vincent; Crouzillat, Dominique
PA Societe des Produits Nestle S.A., Switz.
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 999283	A1	20000510	EP 1998-121043	19981105
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	WO 2000028078	A1	20000518	WO 1999-EP8268	19991029
	W: AU, BR, CA, CN, ID, IN, JP, MX, US, ZA				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	AU 9964759	A1	20000529	AU 1999-64759	19991029
	AU 762765	B2	20030703		
	BR 9915050	A	20010807	BR 1999-15050	19991029
	EP 1127158	A1	20010829	EP 1999-952637	19991029
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002529105	T2	20020910	JP 2000-581244	19991029
	ZA 2001004563	A	20020704	ZA 2001-4563	20010604
PRAI	EP 1998-121043	A	19981105		
	WO 1999-EP8268	W	19991029		

AB The present invention presents mol. **genetic** techniques for **detection** of **cocoa** DNA in fermented and/or roasted cocoa beans, and in chocolate. The cocoa includes varieties that have been modified by common breeding techniques or modified by genetic engineering. Specifically, the invention presents the use of polymerase chain reaction (**PCR**), random amplified polymorphic DNA (RAPD), restriction fragment length polymorphism (RFLP) and microsatellite identification in detecting cocoa chloroplastic and/or **mitochondrial** DNA. The invention provides primers used in the amplification of the 5S rRNA intergenic spacer and seed storage protein (SSP) gene from cocoa. The sequences of SSP gene and 5S rRNA intergenic spacer-specific primers, as

well as RAPD primers, were included in the invention.
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB The present invention presents mol. **genetic** techniques for **detection** of **cocoa** DNA in fermented and/or roasted cocoa beans, and in chocolate. The cocoa includes varieties that have been modified by common breeding techniques or modified by genetic engineering. Specifically, the invention presents the use of polymerase chain reaction (**PCR**), random amplified polymorphic DNA (RAPD), restriction fragment length polymorphism (RFLP) and microsatellite identification in detecting cocoa chloroplastic and/or **mitochondrial** DNA. The invention provides primers used in the amplification of the 5S rRNA intergenic spacer and seed storage protein (SSP) gene from cocoa. The sequences of SSP gene and 5S rRNA intergenic spacer-specific primers, as well as RAPD primers, were included in the invention.

ST DNA chloroplast **mitochondria** detection cocoa fermented roasted bean chocolate; **PCR** RAPD RFLP cocoa DNA detection fermented roasted bean; chocolate cocoa DNA detection **PCR** RAPD RFLP; microsatellite cocoa DNA detection fermented roasted bean chocolate

IT Gene, plant
RL: ANT (Analyte); ANST (Analytical study)
(5S rRNA, intergenic spacer of; mol. **genetic** techniques (**PCR**, RAPD, RFLP and microsatellite identification) for **cocoa** DNA **detection** in fermented or roasted beans and chocolate)

IT Genetic element
RL: ANT (Analyte); ANST (Analytical study)
(IGS (intergenic spacer), of 5S RNA **gene**; mol. **genetic** techniques (**PCR**, RAPD, RFLP and microsatellite identification) for **cocoa** DNA **detection** in fermented or roasted beans and chocolate)

IT **Cocoa** products
(beans, roasted and/or fermented; mol. **genetic** techniques (**PCR**, RAPD, RFLP and microsatellite identification) for **cocoa** DNA **detection** in fermented or roasted beans and chocolate)

IT Confectionery
Confectionery
(dark **chocolate**; mol. **genetic** techniques (**PCR**, RAPD, RFLP and microsatellite identification) for **cocoa** DNA **detection** in fermented or roasted beans and chocolate)

IT **Chocolate**
Chocolate
(dark; mol. **genetic** techniques (**PCR**, RAPD, RFLP and microsatellite identification) for **cocoa** DNA **detection** in fermented or roasted beans and chocolate)

IT Gene, plant
RL: ANT (Analyte); ANST (Analytical study)
(for seed storage protein; mol. **genetic** techniques (**PCR**, RAPD, RFLP and microsatellite identification) for **cocoa** DNA **detection** in fermented or roasted beans and chocolate)

IT Microsatellite DNA
RL: ANT (Analyte); ANST (Analytical study)
(identification of; mol. **genetic** techniques (**PCR**, RAPD, RFLP and microsatellite identification) for **cocoa** DNA **detection** in fermented or roasted beans and chocolate)

IT Breeding, plant
Chloroplast
Cocoa (Theobroma cacao)
Genetic engineering
Mitochondria
PCR (polymerase chain reaction)

```
     RAPD analysis
     RFLP (restriction fragment length polymorphism)
        (mol. genetic techniques (PCR, RAPD, RFLP and
        microsatellite identification) for cocoa DNA
        detection in fermented or roasted beans and chocolate)
IT   DNA
     RL: ANT (Analyte); ANST (Analytical study)
        (mol. genetic techniques (PCR, RAPD, RFLP and
        microsatellite identification) for cocoa DNA
        detection in fermented or roasted beans and chocolate)


=> d l7 1-4

L7   ANSWER 1 OF 4  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2003:609270  CAPLUS
DN   139:241115
TI   Detection of hazelnut DNA traces in chocolate by PCR
AU   Herman, Lieve; De Block, Jan; Viane, Ronald
CS   Department for Animal Product Quality, Agricultural Research Centre,
     Melle, B-9090, Belg.
SO   International Journal of Food Science and Technology (2003), 38(6),
     633-640
     CODEN: IJFTEZ; ISSN: 0950-5423
PB   Blackwell Publishing Ltd.
DT   Journal
LA   English
RE.CNT  9      THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7   ANSWER 2 OF 4  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2003:590944  CAPLUS
DN   139:145008
TI   Genomic and cDNA sequences of mouse RAB38, RAB38 mutation detection, and
     RAB38 function alteration to modulate mammalian pigmentation
IN   Pavan, William J.; Loftus, Stacie K.
PA   The Government of the Usa as Represented by the Secretary of the Dept.
     ofHealth and Human Services, USA
SO   PCT Int. Appl., 62 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
PI   WO 2003061580      A2   20030731      WO 2003-US1622   20030117
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD,
             RU, TJ, TM
        RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,
             CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,
             NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
             ML, MR, NE, SN, TD, TG
PRAI US 2002-349929P   P    20020118

L7   ANSWER 3 OF 4  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2001:813990  CAPLUS
DN   135:357065
TI   Analysis procedure for the detection of cocoa husks in cocoa products.
IN   Muench, Michael Anton; Schieberle, Peter; Fischer, Markus; Bacher,
```

```
     Adelbert
PA   Germany
SO   Ger. Offen., 14 pp.
     CODEN: GWXXBX
DT   Patent
LA   German
FAN.CNT 1
     PATENT NO.        KIND  DATE            APPLICATION NO.  DATE
     ---------------   ----  --------        ---------------  --------
PI   DE 10019289       A1    20011108        DE 2000-10019289 20000419
PRAI DE 2000-10019289        20000419

L7   ANSWER 4 OF 4  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2000:314432  CAPLUS
DN   132:330582
TI   Use of DNA identification techniques for the determination of genetic
     material of cocoa in fermented or roasted beans and chocolate
IN   Petiard, Vincent; Crouzillat, Dominique
PA   Societe des Produits Nestle S.A., Switz.
SO   Eur. Pat. Appl., 20 pp.
     CODEN: EPXXDW
DT   Patent
LA   English
FAN.CNT 1
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PI   EP 999283         A1    20000510        EP 1998-121043   19981105
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
     WO 2000028078     A1    20000518        WO 1999-EP8268   19991029
         W:  AU, BR, CA, CN, ID, IN, JP, MX, US, ZA
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
             PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     AU 9964759        A1    20000529        AU 1999-64759    19991029
     AU 762765         B2    20030703
     BR 9915050        A     20010807        BR 1999-15050    19991029
     EP 1127158        A1    20010829        EP 1999-952637   19991029
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, FI
     JP 2002529105     T2    20020910        JP 2000-581244   19991029
     ZA 2001004563     A     20020704        ZA 2001-4563     20010604
PRAI EP 1998-121043    A     19981105
     WO 1999-EP8268    W     19991029
RE.CNT  5      THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT


=> d l6 1-8

L6   ANSWER 1 OF 8  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2003:609270  CAPLUS
DN   139:241115
TI   Detection of hazelnut DNA traces in chocolate by PCR
AU   Herman, Lieve; De Block, Jan; Viane, Ronald
CS   Department for Animal Product Quality, Agricultural Research Centre,
     Melle, B-9090, Belg.
SO   International Journal of Food Science and Technology (2003), 38(6),
     633-640
     CODEN: IJFTEZ; ISSN: 0950-5423
PB   Blackwell Publishing Ltd.
DT   Journal
LA   English
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L6   ANSWER 2 OF 8  CAPLUS  COPYRIGHT 2004 ACS on STN
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TI   Genomic and cDNA sequences of mouse RAB38, RAB38 mutation detection, and
     RAB38 function alteration to modulate mammalian pigmentation
IN   Pavan, William J.; Loftus, Stacie K.
PA   The Government of the Usa as Represented by the Secretary of the Dept.
     ofHealth and Human Services, USA
SO   PCT Int. Appl., 62 pp.
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DT   Patent
LA   English
FAN.CNT 1
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PI   WO 2003061580      A2   20030731      WO 2003-US1622   20030117
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD,
             RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,
             CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,
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             ML, MR, NE, SN, TD, TG
PRAI US 2002-349929P    P    20020118

L6   ANSWER 3 OF 8  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2001:813990  CAPLUS
DN   135:357065
TI   Analysis procedure for the detection of cocoa husks in cocoa products.
IN   Muench, Michael Anton; Schieberle, Peter; Fischer, Markus; Bacher,
     Adelbert
PA   Germany
SO   Ger. Offen., 14 pp.
     CODEN: GWXXBX
DT   Patent
LA   German
FAN.CNT 1
     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
PI   DE 10019289        A1   20011108      DE 2000-10019289 20000419
PRAI DE 2000-10019289        20000419

L6   ANSWER 4 OF 8  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2000:470722  CAPLUS
DN   133:72066
TI   Site specific molecular diagnosis using laser assisted microdissection
     technique
AU   Sato, Nakako; Aoyagi, Yasuyuki; Noguchi, Masayuki
CS   Grad. Sch. Med., Tsukuba Univ., Japan
SO   Byori to Rinsho (2000), 18(7), 624-627
     CODEN: BYRIEM; ISSN: 0287-3745
PB   Bunkodo
DT   Journal; General Review
LA   Japanese

L6   ANSWER 5 OF 8  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2000:314432  CAPLUS
DN   132:330582
TI   Use of DNA identification techniques for the determination of genetic
```

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     material of cocoa in fermented or roasted beans and chocolate
IN   Petiard, Vincent; Crouzillat, Dominique
PA   Societe des Produits Nestle S.A., Switz.
SO   Eur. Pat. Appl., 20 pp.
     CODEN: EPXXDW
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.         KIND  DATE            APPLICATION NO.  DATE
     ---------------    ----  --------        ---------------  --------
PI   EP 999283           A1   20000510        EP 1998-121043   19981105
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
     WO 2000028078       A1   20000518        WO 1999-EP8268   19991029
         W:  AU, BR, CA, CN, ID, IN, JP, MX, US, ZA
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
             PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     AU 9964759          A1   20000529        AU 1999-64759    19991029
     AU 762765           B2   20030703
     BR 9915050          A    20010807        BR 1999-15050    19991029
     EP 1127158          A1   20010829        EP 1999-952637   19991029
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, FI
     JP 2002529105       T2   20020910        JP 2000-581244   19991029
     ZA 2001004563       A    20020704        ZA 2001-4563     20010604
PRAI EP 1998-121043      A    19981105
     WO 1999-EP8268      W    19991029
RE.CNT  5       THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
                ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6   ANSWER 6 OF 8  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   1909:4262  CAPLUS
DN   3:4262
OREF 3:811c-e
TI   General Methods for the Detection of Adulteration in
     Cocoa and Chocolate
AU   Bordas; Touplain, F.
CS   Labs. of the Minister of Finance
SO   Annales des Falsifications et des Fraudes (1909), 1, 12-29
     CODEN: AFEFA4; ISSN: 0365-2157
DT   Journal
LA   Unavailable

L6   ANSWER 7 OF 8  BIOSIS  COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AN   2002:326471  BIOSIS
DN   PREV200200326471
TI   Analysis of vicilin (7S)-class globulin in cocoa cotyledons from various
     genetic origins.
AU   Amin, I.; Jinap, S. [Reprint author]; Jamilah, B.; Harikrisna, K.; Biehl,
     B.
CS   Faculty of Food Science and Biotechnology, Universiti Putra Malaysia, UPM
     Serdang, 43400, Selangor, Malaysia
     jinap@putra.upm.edu.my
SO   Journal of the Science of Food and Agriculture, (15 May, 2002) Vol. 82,
     No. 7, pp. 728-732. print.
     CODEN: JSFAAE. ISSN: 0022-5142.
DT   Article
LA   English
ED   Entered STN: 5 Jun 2002
     Last Updated on STN: 5 Jun 2002

L6   ANSWER 8 OF 8     MEDLINE on STN
AN   79167434      MEDLINE
DN   PubMed ID: 436019
```

TI Inhibitory effect of cocoa powder on the growth of a variety of bacteria in different media.
AU Park C E; Stankiewicz Z K; Rayman M K; Hauschild A H
SO Canadian journal of microbiology, (1979 Feb) 25 (2) 233-5.
Journal code: 0372707. ISSN: 0008-4166.
CY Canada
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 197907
ED Entered STN: 19900315
Last Updated on STN: 19900315
Entered Medline: 19790716

=> d 6-8 kwic
2 ANSWERS ARE AVAILABLE. SPECIFIED ANSWER NUMBER EXCEEDS ANSWER SET SIZE
The answer numbers requested are not in the answer set.
ENTER ANSWER NUMBER OR RANGE (1):end

=> d l6 6-8 kwic

L6 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
TI **General** Methods for the **Detection** of Adulteration in **Cocoa** and **Chocolate**

L6 ANSWER 7 OF 8 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB . . . precursors of cocoa-specific aroma and are formed through proteolysis during fermentation. High-resolution electrophoresis of native proteins isolated from ripe, unfermented **cocoa** cotyledons harvested from different cultivars was used to **determine** **genetic** differences of the genotypes. Flavour differences have been reported to exist after standard fermentation in cocoa beans harvested from various. . .

L6 ANSWER 8 OF 8 MEDLINE on STN
AB The inhibitory effect of **cocoa** powder on 102 organisms belonging to 13 **genera** was **determined**. All organisms tested were inhibited by 5% cocoa. Shigella, Staphylococcus, Micrococcus, and Bacillus were the most sensitive. The degree of. . .

=>

09/889,139

Freeform Search

Database:
- US Pre-Grant Publication Full-Text Database
- US Patents Full-Text Database
- US OCR Full-Text Database
- EPO Abstracts Database
- JPO Abstracts Database
- Derwent World Patents Index
- IBM Technical Disclosure Bulletins

Term: L11 and (PCR or RFLP)

Display: 10 **Documents in Display Format:** - **Starting with Number** 11

Generate: ○ Hit List ◉ Hit Count ○ Side by Side ○ Image

Search Clear Interrupt

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L11	(detect$3 or determin$3) same (gene$3 or DNA or RNA or nucleic acid or oligonucleotide) same (cocoa or chocolate)	85	L11
L10	(detect$3 or determin$3) near5 (gene$3 or DNA or ENA or nucleic acid or oligonucleotide$1) near5 (cocao or chocolate)	0	L10
L9	gene$3 near5 (cocoa or chocolate) near5 (detect3 or determin$3)	2	L9
L8	L6 AND HYBRIDIZ$5	0	L8
L7	L6 and PCR	1	L7
L6	L5 and cocoa	4	L6
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☐ 1. 6696485. 10 Oct 02; 24 Feb 04. Procyanidin and cyclo-oxygenase modulator compositions. Romanczyk, Jr.; Leo J., et al. 514/457; 549/406. A61K031/353 C07D311/62.

☐ 2. 6670390. 21 Nov 00; 30 Dec 03. Cocoa extract compounds and methods for making and using the same. Romanczyk, Jr.; Leo J., et al. 514/456; 426/631 549/400. A61K031/353 C07D311/74.

☐ 3. 6638971. 05 Feb 01; 28 Oct 03. Cocoa extract compounds and methods for making and using the same. Romanczyk, Jr.; Leo J., et al. 514/456; 426/631 549/399. A61K031/353 C07D311/74.

☐ 4. 6423743. 21 Nov 00; 23 Jul 02. Cocoa extract compounds and methods for making and using the same. Romancyzk, Jr.; Leo J.. 514/456; 426/631 549/399. A61K031/353 C07D311/74.

Can be good 102 reference ✓ 26 pages

☑ 5. 6297273. 02 Apr 97; 02 Oct 01. Use of cocoa solids having high cocoa polyphenol content in tabletting compositions and capsule filling compositions. Romanczyk, Jr.; Leo J.. 514/456; 424/452 424/465 426/631 549/399 549/407. A61K009/20 A61K031/353 C07D311/62 C07D311/78.

☐ 6. 5919620. 07 Jun 95; 06 Jul 99. Heat shock protein HSP72 of Streptococcus pneumoniae. Brodeur; Bernard R., et al. 435/6; 435/4 435/69.1 435/963 536/23.4 536/23.7. C12Q001/06 C12Q001/68 C12P021/06 G01N033/53.

☐ 7. 5770433. 21 Jan 93; 23 Jun 98. Recombinant 47 and 31KD cocoa proteins and precursor. Spencer; Margaret Elizabeth, et al. 435/252.33; 426/534 426/656 435/254.21 435/320.1 435/69.1 530/370 536/23.6. C12N005/00 A23J003/14 C07K014/415.

☐ 8. 5668007. 11 Dec 92; 16 Sep 97. Recombinant 21 kD cocoa protein and precursor. Spencer; Margaret Elizabeth, et al. 435/252.3; 435/252.33 435/254.21 435/320.1 435/325 435/69.1 435/71.1 435/71.2 530/370 530/377 530/379 536/23.1 536/23.6. C07K014/415 C12N015/29 C12N001/21 C12N001/19.

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L9: Entry 4 of 8 File: USPT Jul 23, 2002

DOCUMENT-IDENTIFIER: US 6423743 B1
TITLE: Cocoa extract compounds and methods for making and using the same

Drawing Description Text (28):
FIG. 15L shows the growth inhibition of Hela cells when treated with crude polyphenol extracts obtained from fermented cocoa beans and dried cocoa beans (stages throughout fermentation and sun drying; % control vs. concentration, .mu.g/mL; open circle is day zero fraction darkened circle is day 1 fraction, open inverted triangle is day 2 fraction, darkened inverted triangle is day 3 fraction, open square is day 4 fraction and darkened square is day 9 fraction);

Drawing Description Text (51):
FIG. 30A shows the substrate utilization during fermentation of cocoa beans;

Drawing Description Text (52):
FIG. 30B shows the metabolite production during fermentation;

Drawing Description Text (53):
FIG. 30C shows the plate counts during fermentation of cocoa beans;

Drawing Description Text (54):
FIG. 30D shows the relative concentrations of each component in fermented solutions of cocoa beans;

Detailed Description Text (6):
Additionally, Example 25 lists the heretofore never reported concentrations of the inventive compounds found in Theobrdma and Herrania species and their inter- and intra-species crosses; and Example 25 also describes methods of modulating the amounts of the inventive compounds which may be obtained from cocoa by manipulating cocoa fermentation conditions.

Detailed Description Text (8):
The extracts, compounds and combinations of compounds derived therefrom having activity, without wishing to necessarily be bound by any particular theory, have been identified as cocoa polyphenol(s), such as procyanidins. These cocoa procyanidins have significant anti-cancer, anti-tumor or antineoplastic activity; antioxidant activity; inhibit DNA topoisomerase II enzyme and oxidative damage to DNA; possess antimicrobial activity; have the ability to modulate cyclo-oxygenase and/or lipoxygenase, NO or NO-synthase, apoptosis, platelet aggregation and blood or in vivo glucose, and have efficacy as non-steroidal antiinflammatory agents.

Detailed Description Text (51):
One significant property of COX-2 expressing cell lines is the enhanced expression of genes which participate in the modulation of apoptosis, i.e., programmed cell death. Several NSAIDs have been implicated in increased cell death and the induction of apoptosis in chicken embryo fibroblasts.

Detailed Description Text (70):
The role of NO in the immune system is different from its function in blood vessels. Macrophages contain a form of NOS that is inducible, rather than constitutive, referred to as iNOS. Transcription of the iNOS gene is controlled

both positively and negatively by a number of biological response modifiers called cytokines. The most important inducers are gamma-interferon, tumor necrosis factor, interleukin-1, interleukin-2 and lipopolysaccharide (LPS), which is a component of the cell walls of gram negative bacteria. Stimulated macrophages produce enough NO to inhibit ribonuclease reductase, the enzyme that converts ribonucleotides to the deoxyribonucleotides necessary for DNA synthesis. Inhibition of DNA synthesis may be be an important way in which macrophages and other tissues possessing iNOS can inhibit the growth of rapidly dividing tumor cells or infectious bacteria.

Detailed Description Text (107):
Additionally, selective processing coupled with the identification of cocoa genotypes of interest could be used to prepare Standard-of-Identity (SOI) and non-SOI chocolate products as vehicles to deliver the active. compounds to a patient in need of treatment for the disease conditions described above, as well as a means for the delivery of conserved levels of the inventive compounds.

Detailed Description Text (117):
Identification of Genes

Detailed Description Text (118):
A further embodiment of the invention comprehends the modulation of genes expressed as a result of intimate cellular contact by the inventive compounds or a combination of compounds. As such, the present invention comprehends methods for the identification of genes induced or repressed by the inventive compounds or a combination of compounds which are associated with several diseases, including but not limited to atherosclerosis, hypertension, cancer, cardiovascular disease, and inflammation. Specifically, genes which are differentially expressed in these disease states, relative to their expression in "normal" nondisease states are identified and described before and after contact by the inventive compounds or a combination of compounds.

Detailed Description Text (119):
As mentioned in the previous discussion, these diseases and disease states are based in part on free radical interactions with a diversity of biomolecules. A central theme in these diseases is that many of the free radical reactions involve reactive oxygen species, which in turn induce physiological conditions involved in disease progression. For instance, reactive oxygen species have been implicated in the regulation of transcription factors such as nuclear factor (NF)-.kappa.B. The target genes for NF-.kappa.B comprise a list of genes linked to coordinated inflammatory response. These include genes encoding tumor necrosis factor (TNF)-.alpha., interleukin (IL)-I, IL-6, IL-8, inducible NOS, Major Histocompatabilty Complex (MHC) class I antigens, and others. Also, genes that modulate the activity of transcription factors may in turn be induced by oxidative stress. Oxidative stress is the imbalance between radical scavenging and radical generating systems. Several known examples (Winyard and Blake, 1997) of these conditions include gadd153 (a gene induced by growth arrest and DNA damage), the product of which has been shown to bind NF-IL6 and form a heterodimer that cannot bind to DNA. NF-IL6 upregulates the expression of several genes, including those encoding interleukins 6 6 and 8. Another example of oxidative stress inducible genes are gadd45 which regulates the effects of the transcription factor p53 in growth arrest. p53 codes for the p53 protein which can halt cell division and induce abnormal cells (e.g. cancer) to undergo apoptosis.

Detailed Description Text (120):
Given the full panoply of unexpected, nonobvious and novel utilities for the inventive compounds or combination of compounds for utility in a diverse array of diseases based in part by free radical mechanisms, the invention further comprehends strategies to determine the temporal effects on gene(s) or gene product (s) expression by the inventive compounds in animal in vitro and/or in vivo models of specific disease or disease states using gene expression assays. These assays

include, but are not limited to Differential Display, sequencing of cDNA libraries, Serial Analysis of Gene Expression (SAGE), expression monitoring by hybridization to to high density oligonucleotide arrays and various reverse transcriptase-polymerization chain reaction (RT-PCR) based protocols or their combinations (Lockhart et al., 1996).

Detailed Description Text (121):
The comprehensive physiological effects of the inventive compounds or combination of compounds embodied in the invention, coupled to a genetic evaluation process permits the discovery of genes and gene products, whether known or novel, induced or or repressed. For instance, the invention comprehends the in vitro and in vivo induction and/or repression of cytokines (e.g. IL-1, IL-2, IL-6, IL-8, IL-12, and TNF-.alpha.) in lymphocytes using RT-PCR. Similarly, the invention comprehends the application of Differential Display to ascertain the induction and/or repression of select genes; for the cardiovascular area (e.g. superoxide dismutase, heme oxidase, COX I and 2, and other oxidant defense genes) under stimulated and/or oxidant stimulated conditions (e.g. TNF-.alpha. or H.sub.2 O.sub.2) conditions. For the cancer area, the invention comprehends the application of Differential Display to ascertain the induction and/or repression of genes or gene products such as CuZn-superoxide dismutase, Mn-superoxide dismutase, catalase, etc., in control and oxidant stressed cells.

Detailed Description Text (214):
Another series of assays were performed on crude polyphenol extracts prepared on a daily basis from a one ton scale traditional 5-day fermentation of Brazilian cocoa beans, followed by a 4-day sun drying stage. The results shown in FIG. 15L showed no obvious effect of these early processing stages, suggesting little change in the composition of the polyphenols. However, it is known (Lehrian and Patterson, 1983) that polyphenol oxidase (PPO) will oxidize polyphenols during the fermentation stage. To determine what effect enzymatically oxidized polyphenols would have on activity, another experiment was performed. Crude PPO was prepared by extracting finely ground, unfermented, freeze dried, defatted Brazilian cocoa beans with acetone at a ratio of 1 gm powder to 10 mL acetone. The slurry was centrifuged at 3,000 rpm for 15 min. This was repeated three times, discarding the supernatant each time with the fourth extraction being poured through a Buchner filtering funnel. The acetone powder was allowed to air dry, followed by assay according to the procedures described by McLord and Kilara, (1983). To a solution of crude polyphenols (100 mg/10 mL Citrate-Phosphate buffer, 0.02M, pH 5.5) 100 mg of acetone powder (4,000 units activity/mg protein) was added and allowed to stir for 30 min. with a stream of air bubbled through the slurry. The sample was centrifuged at 5,000.times.g for 15 min. and the supernatant extracted 3.times. with 20 mL ethyl acetate. The ethyl acetate extracts were combined, taken to dryness by distillation under partial vacuum and 5 mL water added, followed by lyophilization. The material was then assayed against Hela cells and the dose-response compared to crude polyphenol extracts that were not enzymatically treated. The results (FIG. 15M) showed a significant shift in the dose-response curve for the enzymatically oxidized extract, showing that the oxidized products were more inhibitory than their native forms.

Detailed Description Text (218):
To determine whether cocoa extracts containing procyanidins possessed antioxidant properties, a standard Rancimat method was employed. The procedures described in Examples 1, 2 and 3 were used to prepare cocoa extracts which were manipulated further to produce two fractions from gel permeation chromatography. These two fractions are actually combined fractions A through C, and D and E (See FIG. 1) whose antioxidant properties were compared against the synthetic antioxidants BHA and BHT.

Detailed Description Text (341):
Obtaining Desired Procyanidins Via Manipulating Fermentation

Detailed Description Text (342):
Microbial strains representative of the succession associated with cocoa fermentation were selected from the M&M/Mars cocoa culture collection. The following following isolates were used: Acetobacter aceti ATCC 15973 Lactobacillus sp. (BH 42) Candida cruzii (BA 15) Saccharomyces cerevisiae (BA 13) Bacillus cereus (BE 35) Bacillus sphaericus (ME 12)

Detailed Description Text (345):
The bench scale fermentation was performed in duplicate. All treatments were incubated as indicated below: Day 1: 26.degree. C. Day 2: 26.degree. C. to 50.degree. C. Day 3: 50.degree. C. Day 4: 45.degree. C. Day 5: 40.degree. C.

Detailed Description Text (346):
The model fermentation was monitored over the duration of the study by plate counts to assess the microbial population and HPLC analysis of the fermentation medium for the production of microbial metabolites. After treatment, the beans were dried under a laminar flow hood to a water activity of 0.64 and were roasted at 66.degree. C. for 15 min. Samples were prepared for procyanidin analysis. Three beans per treatment were ground and defatted with hexane, followed by extraction with an acetone:water:acetic acid (70:29.5:0.5%) solution. The acetone solution extract was filtered into vials and polyphenol levels were quantified by normal phase HPLC as in Example 13, method B. The remaining beans were ground and tasted. The cultural and analytical profiles of the model bench-top fermentation process is shown in FIGS. 30A-C. The procyanidin profiles of cocoa beans subjected to various fermentation treatments is shown in FIG. 30D.

Detailed Description Text (347):
This Example demonstrates that the invention need not be limited to any particular cocoa genotype; and, that by manipulating fermentation, the levels of procyanidins produced by a particular Theobroma or Herrania species or their inter or intra species specific crosses thereof can be modulated, e.g., enhanced.

Detailed Description Text (360):
Using blood glucose levels as an indicator for the signal events which occur in vivo for the regulation of appetite and satiety, a series of simple experiments were conducted using a healthy male adult volunteer age 48 to determine whether cocoa polyphenols would modulate glucose levels. Cocoa polyphenols were partially purified from Brazilian cocoa beans according to the methods described by Clapperton et al. (1992). This material contained no caffeine or theobromine. Fasting blood glucose levels were analyzed on a timed basis after ingestion of 10 fl. oz of Dexicola 75 (caffeine free) Glucose tolerance test beverage (Curtin Matheson 091-421) with and without 75 mg cocoa polyphenols. This level of polyphenols represented 0.1% of the total glucose of the test beverage and reflected the approximate amount that would be present in a standard 100 g chocolate bar. Blood glucose levels were determined by using the Accu-Chek III blood glucose monitoring system (Boehringer Mannheim Corporation). Blood glucose levels were measured before ingestion of test beverage, and after ingestion of the test beverage at the following timed intervals: 15, 30, 45, 60, 75, 90, 120 and 180 minutes. Before the start of each glucose tolerance test, high and low glucose level controls were determined. Each glucose tolerance test was performed in duplicate. A control test solution containing 75 mg cocoa polyphenols dissolved in 10 fl. oz. distilled water (no glucose) was also performed.

Detailed Description Text (403):
FIG. 55 indicates that only procyanidin fraction C, at 100 .mu.g/mL, could induce NO production by monocytes/macrophages. Basal NO production by these cells was undetectable and no nitrite could be detected in any of the cocoa procyanidin fractions used at 100 .mu.g/mL. FIG. 56 indicates that procyanidin fractions A and D enhanced LPS-induced NO production by .UPSILON.-interferon primed

monocytes/macrophages. Procyanidin fraction C was marginally effective, since LPS-stimulated monocytes/macrophages cultured in the absence of procyanidin fractions produced only 4 .mu.mole/10.sup.5 cells/48 hours. .UPSILON.-Interferon alone was ineffective in inducing NO.

Detailed Description Text (478):

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Detailed Description Paragraph Table (23):

Fermentation Model Water Ethanol/acid infusate Fermentation daily daily transfer to daily transfer bench scale transfer solutions of to fermented model to fresh alcohol and acid pulp fermentation in water corresponding to pasteurized on sterile pulp levels determined each successive coinoculated at each stage of day of with test a model pulp fermentation strains fermentation

Detailed Description Paragraph Table (27):

TABLE 14 Procyanidin Levels in Cocoa Raw Materials .mu.g/g Heptamers and Sample Monomers Dimers Trimers Tetramers Pentamers Hexamers Higher Total Unfermented 13,440 13,440 6,425 6,401 5,292 4,236 3,203 5,913 44,910 Fermented 2,695 1,538 1,362 740 470 301 277 7,383 Roasted 2,656 1,597 921 337 164 ND* ND 5,675 Choc. Liquor 2,805 1,446 881 442 184 108 ND 5,866 Cocoa Hulls 114 53 14 ND ND ND ND 181 Cocoa Powder 1% Fat 506 287 112 ND ND ND ND 915 Cocoa Powder 11% Fat 1,523 1,224 680 46 ND ND ND 3,473 Red Dutch Cocoa 1,222 483 103 ND ND ND ND 1,808 Powder, pH 7.4, 11% fat Red Dutch Cocoa 168 144 60 ND ND ND ND 372 Powder, pH 8.2, 23% fat ND* = None detected.

Other Reference Publication (34):

Porter, L.J., Ma, Z. and Chan, B.G., "Cocoa Procyanidins: Major Flavanoids and Identification of Some Minor Metabolites," Phytochemistry, 30, 1657-1663 (1991).

CLAIMS:

1. An assay for identifying at least one gene induced or repressed by a procyanidin monomer and/or oligomer comprising a gene expression assay and a procyanidin monomer monomer and/or oligomer obtained from a natural source.

9. An assay for identifying at least one gene induced or repressed by a procyanidin monomer and/or oligomer comprising a gene expression assay and a synthetically prepared procyanidin monomer and/or oligomer.

14. The assay of claim 1, wherein the induction or repression of the gene is associated with at least one of the following diseases: atherosclerosis, hypertension, cancer, cardiovascular disease, inflammation.

15. The assay of claim 9, wherein the induction or repression of the gene is associated with at least one of the following diseases: atherosclerosis, hypertension, cancer, cardiovascular disease, inflammation.

16. An assay for identifying at least one gene induced or repressed by a polymeric compound of the formula A.sub.n comprising a gene expression assay and the polymeric compound of the formula A.sub.n wherein A is a monomer of the following formula: ##STR9##

wherein n is an integer from 2-18, such that there is at least one terminal monomeric unit A, and one or a plurality of additional monomeric units R is 3-(.alpha.)-OH, 3-(.beta.)-OH, 3-(.alpha.)-O-sugar, or 3-(.beta.)-O-sugar; bonding between adjacent monomers takes place at positions selected from the group consisting of 4, 6, and 8; a bond for additional monomeric unit in position 4 has alpha or beta stereochemistry; X, Y, and Z are selected from the group consisting of monomeric unit A, hydrogen, and a sugar, with the provisos that as to at least one terminal monomeric unit, bonding of the additional monomeric unit thereto is at position 4 and optionally Y=Z=hydrogen; the sugar is optionally substituted with a phenolic moiety, and

pharmaceutically acceptable salts, derivatives thereof, oxidation products thereof, or combinations thereof.

17. The assay of claim 16 wherein said gene expression assay is selected from the group consisting of Differential Display assay, Serial Analysis of Gene Expression assay and expression monitoring by hybridization to high density oligonucelotide arrays.

18. The assay of claim 16, wherein the induction or repression of the gene is associated with at least one of the following diseases: atherosclerosis, hypertension, cancer, cardiovascular disease, inflammation.

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     (FILE 'HOME' ENTERED AT 11:04:44 ON 30 MAY 2004)

     FILE 'CAPLUS, BIOSIS, MEDLINE' ENTERED AT 11:05:05 ON 30 MAY 2004
L1              1 S PETIARD.IN.
L2              0 S L1 AND COCOA
L3              0 S CROUZILLAT.IN.
L4              0 S PETIARD.AU.
L5              0 S CROUZILLAT.AU.
L6              8 S GENE###(10A)(COCOA OR CHOCOLATE)(10A)(DETECT### OR DETERMIN##
L7              4 S L6 AND PCR
L8              2 S L7 AND (CHITINASE OR MITOCHONDR### OR CHOROPLAS###)
L9          13736 S (DETECT### OR DETERMIN###)(10A)(CHITINATSE OR MITOCHONDR### O
L10             1 S L9 AND COCOA
L11           434 S (DETECT### OR DETERMIN### OR DECID###)(10A)COCOA
L12            28 S L11 AND GENE###
L13             5 S L12 AND (PCR OR RFLP)
L14             1 S L13 AND (CHITINASE OR MITOCHONDR### OR CHLOROPLAS### OR SEED
L15           246 S (DETEC### OR DETERMIN### OR DECID###)(10A)COCOA
L16            16 S L15  AND GENE###
L17            12 DUP REM L16 (4 DUPLICATES REMOVED)
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